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***IN THE UNITED STATES PATENT AND TRADEMARK OFFICE***

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In re application of: MOSTAFAZADEH et al.

Attorney Docket No.:  
NSC1P226R/P03856R1

Application No.: 10/016,750

Examiner: Stark, Jarrett J.

Filed: December 10, 2001

Group: 2823

Title: LEAD FRAME DESIGN FOR INCREASED  
CHIP PINOUT

Confirmation No.: 5469

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**APPEAL BRIEF TRANSMITTAL  
(37 CFR 192)**

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Alexandria, VA 22313-1450

Sir:

This brief is in furtherance of the Notice of Appeal filed in this case on July 30, 2008.

This application is on behalf of

☐ Small Entity      ☒ Large Entity

Pursuant to 37 CFR 1.17(f), the fee for filing the Appeal Brief is:

☐ \$255.00 (Small Entity)    ☒ \$510.00 (Large Entity)

☐ Applicant(s) hereby petition for a \_\_\_\_\_ extension(s) of time to respond under 37 CFR 1.136.

If an additional extension of time is required, please consider this a petition therefor.

☐ An extension for \_\_\_\_\_ months has already been secured and the fee paid therefor of \$ \_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.

☒ Applicant(s) believe that no (additional) Extension of Time is required; however, if it is determined that such an extension is required, Applicant(s) hereby petition that such an

extension be granted and authorize the Commissioner to charge the required fees for an Extension of Time under 37 CFR 1.136 to Deposit Account No. 50-4481.

Total Fee Due:

Appeal Brief fee	\$510.00
Extension Fee (if any)	\$0.00

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☒ The Commissioner is authorized to charge the required fees, and/or any additional fees or credit any overpayment to Deposit Account No. 50-4481, (Order No. NSC1P226R).

Respectfully submitted,  
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**PATENT**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE BEFORE  
THE BOARD OF APPEALS**

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**EX PARTE MOSTAFAZADEH et. al.**

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**Application for Patent**

**Filed December 10, 2001**

**Application No. 10/016,750**

**Examiner Jarrett J. Stark, Art Unit 2823**

**FOR:**

**LEAD FRAME DESIGN FOR INCREASED CHIP PINOUT**

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**APPEAL BRIEF**

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**CERTIFICATE OF EFS-WEB TRANSMISSION**

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Signed: /Kathryn Throckmorton/  
Kathryn Throckmorton

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## **I. REAL PARTY IN INTEREST**

The real party in interest is National Semiconductor Corp., the assignee of the present application.

## **II. RELATED APPEALS AND INTERFERENCES**

The undersigned is not aware of any related appeals and/or interferences.

This application is a reissue of U.S. Patent No. 6,034,423.

## **III. STATUS OF THE CLAIMS**

Claims 1-23 are pending. Claims 1-10 stand allowed. Claims 11-23 stand rejected under 35 USC § 251 as being an improper recapture of subject matter previously surrendered during prosecution of the original application. Claims 11-23 are subject to this appeal.

## **IV. STATUS OF THE AMENDMENTS**

This Appeal is taken from the Final Office Action dated May 13<sup>th</sup>, 2008. Applicants filed a Response to the Final Office Action (labeled "Amendment C") on July 3<sup>rd</sup>, 2008 that included some amendments to the claims. In an Advisory Action dated July 24<sup>th</sup>, 2008, the Examiner entered the amendments but maintained the rejection of claims 11-23.

## **V. SUMMARY OF THE CLAIMED SUBJECT MATTER**

The claimed inventions relate generally to lead frame based integrated circuit packages. More particularly, the leadframe includes a die attach platform and a plurality of contacts. The die attach platform carries a die that is electrically connected to at least some of the contacts. (See, e.g., Fig. 2c-1). A protective casing covers the die and the leadframe while leaving portions of the die attach platform and contacts exposed. (See, e.g., Fig. 2d-2). More specifically, portions of the contacts form attachment pads that are exposed on the bottom surface of the package. (See, e.g., Figs. 2d-1 and 2d-2).

### **A) Claim 11**

Independent claim 11 requires that the leadframe (e.g. 220) has a die attach platform (e.g. 121), a bus bar (e.g. 127) and multiple contacts (e.g. 122) that are spaced apart from the die attach platform (e.g. 121). The bus bar (e.g. 127) is positioned between the die attach platform (e.g. 121) and at least some of the contacts (e.g. 122). (See, e.g., Fig. 2c-1 and Col. 3, lines 26-29). The bottom surfaces of the die attach platform (e.g. 121), contacts (e.g. 122) and bus bar (e.g. 127) are substantially co-planar. (See, e.g., Fig. 2d-2). Each of the contacts (e.g. 122) includes a portion that forms an attachment pad. (See, e.g., Fig. 2d-2). The die attach platform (e.g. 121) carries a die (e.g. 110) that is electrically connected to the bus bar and at least some of the contacts. (See, e.g., Figs. 2c-1, 2c-2 and Col. 3, lines 29-34). A protective casing, which covers parts of the die and the leadframe, leaves bottom surfaces of the die attach pad, bus bar and contacts exposed. (See, e.g., Fig. 2d-2 and Col. 3, lines 38-40). The encapsulation material that forms the protective casing is exposed at the bottom surface of the package. (See, e.g., Fig. 2d-2). This physically isolates the bus bar from at least some of the contacts. The attachment pads are also exposed at the bottom surface of the package. (See, e.g., Figs. 2d-1, 2d-2 and Col. 3, lines 38-44.)

### **B) Claim 19**

Independent claim 19 is somewhat similar to independent claim 11, although it is broader in some respects and narrower in others. Claim 19 requires an electronic module that includes an integrated circuit package and a printed circuit board with a ground. The integrated circuit package includes a leadframe (e.g. 220) with a die attach platform (e.g. 121) and multiple contacts (e.g. 122). (See, e.g., Fig. 2c-1, Col. 3, lines 26-29 and 48-51). The bottom surfaces of the die attach platform

(e.g. 121) and the contacts (e.g. 122) are substantially co-planar. (See, e.g., Fig. 2d-2). Additionally, the die attach platform (e.g. 121) is directly electrically connected to the ground on the printed circuit board. (See, e.g., Col. 3, lines 48-51). The die attach platform (e.g. 121) carries a die (e.g. 110), which has multiple signal pads (e.g. 111) that are electrically connected to at least some of the contacts (e.g. 122). (See, e.g., Fig. 2c-1, Fig. 2c-2 and Col. 3, lines 32-33). The die (e.g. 110) also has at least one ground pad that is electrically connected to the die attach platform (e.g. 121). (See, e.g., Col. 3, lines 33-35). A protective casing covers the die (e.g. 110) and the leadframe (e.g. 122) while leaving the bottom surfaces of the die attach platform and contacts exposed. (See, e.g., Fig. 2d-2 and Col. 3, lines 35-38). The encapsulation material that forms the protective casing is exposed at the bottom surface of the package. (See, e.g., Fig. 2d-2). This physically isolates the die attach platform from at least some of the contacts. The exposed bottom surfaces of the contacts form attachment pads. (See, e.g., Figs. 2d-1, 2d-2 and Col. 3, lines 38-44).

### **C) Claim 23**

In comparison to claims 11 and 19, independent claim 23 is somewhat narrower in some respects and somewhat broader in others. Claim 23 requires a lead frame (e.g. 220) with a die attach platform (e.g. 121), multiple contacts (e.g. 122) and a bus bar (e.g. 127). The contacts (e.g. 122) are spaced apart from the die attach platform (e.g. 121). The bus bar (e.g. 127) is positioned between the die attach platform and at least some of the contacts. (See, e.g., Fig. 2c-1 and Col. 3, lines 26-29). Bottom surfaces of the die attach platform (e.g. 121), the contacts (e.g. 122) and the bus bar (e.g. 127) are substantially co-planar. (See, e.g., Fig. 2d-2). Each of the contacts (e.g. 122) includes a portion that forms an attachment pad. The die attach platform (e.g. 121) carries a die (e.g. 110) that is electrically connected to the bus bar (e.g. 127) and at least some of the contacts (e.g. 122). (See, e.g., Figs. 2c-1, 2c-2 and Col. 3, lines 29-36). A protective casing covers the die (e.g. 110) and the lead frame (e.g. 220), while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed. (See, e.g., Fig. 2d-2 and Col. 3, lines 35-38). The encapsulation material that forms the protective casing is exposed at a bottom surface of the package. This physically isolates the bus bar from at least some of the conductive contacts. The integrated circuit package may be attached to a substrate by soldering the attachment portions of the lead frame to the substrate. (See, e.g., Figs. 2d-1, 2d-2 and Col. 3, lines 38-44 and 48-51).

## VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 11-23 stand rejected under 35 USC § 251 as being an improper recapture of broader subject matter surrendered in the application for the patent upon which the present reissue is based. The Applicant seeks to have these rejections reversed in the outstanding Appeal.

## VII. ARGUMENT

### A) The Present Invention

The claimed inventions relate generally to lead frame based integrated circuit packages. More particularly, the leadframe includes a die attach platform and a plurality of contacts. The die attach platform carries a die that is electrically connected to at least some of the contacts. (See, e.g., Fig. 2c-1). A protective casing covers the die and the leadframe while leaving portions of the die attach platform and contacts exposed. (See, e.g., Fig. 2d-2). More specifically, portions of the contacts form attachment pads that are exposed on the bottom surface of the package. (See, e.g., Figs. 2d-1 and 2d-2).

### B) Rejection under 35 USC § 251 (Improper Recapture)

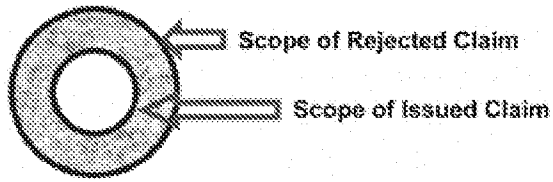
#### 1) Claims 11-14

##### a) Discussion of Recapture Doctrine

After reviewing the '423 patent, case law, and the MPEP, it is respectfully submitted that claims 11-14 as presented, do not improperly recapture subject matter surrendered during prosecution of the original application. Reconsideration is respectfully requested in light of the following remarks.

According to the MPEP 1412.02, an Applicant may recapture claimed subject matter in a reissue application so long as the subject matter was not surrendered in an application to obtain the original patent. More specifically, MPEP 1412.02 (I)(C)(2)(d) states that claims that are broader than the issued claims, **but narrower in relevant part than** the cancelled claims in the original application, are **not** barred by the recapture rule. This section is supported by *Ex Parte Eggert* where the court made a distinction between the scope of rejected claim and the scope of issued claim by stating in pertinent part:





**Drawing 1**

“The shaded area between the circles represents subject matter which is only narrower than the scope of the rejected claim but only broader than the scope of the issued claim. In our view, the surrendered subject matter is the outer circle of Drawing 1 because it is subject matter appellants conceded was unpatentable. The subject matter of the shaded area was not subject to the administrative examination process as the examiner was never directly presented with a claim falling within the scope of the shaded area ... and therefore, in our view, such subject matter is not barred by the recapture rule.” (*Ex Parte Eggert*, 67 USPQ2d 1716, 1717) (emphasis added)

The question before the Patent Office is whether the subject matter in claims 11-14 improperly recaptures a claim scope that was cancelled during prosecution of the original application. More specifically, the subject matter at issue here relates to the scope of the “contacts” element as recited in claim 11 of the reissue application. The claimed “contacts” correspond to the “leads” element recited in claim 1 of the ‘423 patent. It is respectfully submitted that independent claim 11, as currently pending, does not improperly recapture subject matter relating to the contacts that was surrendered in the application for the patent upon which the present reissue is based.

**b) Claims 11-14 Are Not an Improper Recapture**

Original claim 1 of the application that matured into the ‘423 patent recited an integrated circuit package that includes a lead frame comprising the following limitations:

a die attach platform;  
*a plurality of elongated leads which are electrically isolated from said die attach platform*; and  
 a first bus bar which is electrically isolated from said die attach platform and said plurality of elongated leads.  
 (emphasis added)

As shown above, original claim 1 recited a plurality of elongated leads. The claim did not further define the leads beyond requiring that the leads be electrically isolated from the die attach platform. In an amendment dated July 8, 1999 the language of claim 1 relating to the leads was amended to further recite that each of the leads included “a circular portion formed as an attachment pad.”

In contrast, claim 11 as presently presented recites an integrated circuit package that includes a lead frame that has:

a die attach platform,  
a plurality of contacts that are spaced apart from the die attach platform and  
a bus bar that is positioned between the die attach platform and at least some  
of the contacts,  
wherein *bottom surfaces of the die attach platform, the contacts, and the bus  
bar are substantially co-planar*, and  
wherein *each of the contacts includes a portion that forms an attachment  
pad ...*  
*whereby the attachment pads are exposed at a bottom surface of the  
package.*  
(emphasis added)

Claim 11 as presently presented is attempting to recapture subject matter that is **narrower** than claim 1 of the ‘423 patent application as filed before claim 1 was amended during prosecution to include the circular attachment pad feature. Specifically, claim 11 of the reissue application requires that the contact pads (which generally correspond to the leads element in claim 1 of the ‘423 patent) each include “a portion that forms an attachment pad.” As described in the specification, the attachment pads provide a surface that solder bumps can attach to. (See, e.g., Col. 2, lines 46-50.) The “attachment pad” feature was added to claim 1 of the ‘423 patent in the amendment dated July 8, 1999. As pointed out in the office action, the language added to claim 1 set forth that the leads included “a circular portion formed as an attachment pad.”

Claim 11 as currently presented retains the attachment pad limitation – but seeks to broaden the scope of the attachment pad term by eliminating the requirement that the attachment pad have a circular portion. In that sense, claim 11 does seek to broaden the scope of the attachment pad feature that was added during prosecution of the original patent application. However, it does not seek to recapture the full scope of original claim 1 which did not require any attachment pad whatsoever. Further, claim 11 as presently presented includes additional claim elements that are related or relevant to the attachment pad feature that further narrow the scope of the claim relative to the

original scope of claim 1. For example, claim 11 specifically requires a protective casing that covers a die and the lead frame while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed such that **“the attachment pads are exposed at the bottom surface of the package.”** That is, claim 11 specifically requires that the attachment pads (i.e., the feature at issue) be exposed on the bottom surface of the package. The requirement that the attachment pads be exposed on the bottom surface of the package emphasizes one aspect in which the scope of the attachment pad feature of claim 11 is narrowed relative to claim 1, both as originally filed and as issued. It is believed that this narrowing of the attachment pad feature further emphasizes that claim 11 does not improperly recapture the full scope of the relevant portion of claim 1 as originally filed.

Further, claim 11 as currently pending specifically requires that the protective casing be exposed at the bottom surface of the package. With this arrangement the protective casing physically isolates the bus bar from at least some of the conductive contacts. This limitation also substantially narrows the scope of claim 11 relative to the scope of original claim 1.

From the foregoing, it should be apparent that Applicant is not attempting to recapture the scope of the contacts as broadly as recited in claim 1 in the ‘423 patent application as originally filed. Rather, the subject matter of claim 11 as presently presented is in between the scope of the issued claim (i.e. claim 1 of the ‘423 patent as issued which required that the leads including a circular portion formed as an attachment pad) and the claim as originally filed (i.e. claim 1 of the application that matured into the ‘423 patent as originally filed which did not require that the leads include attachment pads). This places claim 11 as presently presented squarely within the boundaries set forth in MPEP 1412.02(I)(C)(2)(d) and *Ex Parte Eggert*, and therefore it is respectfully submitted that claim 11 should **not** be barred by the recapture rule.

It is noted that the outstanding office action appears to take the position that the shape/structural limitation “circular portion formed as an attachment pad” was the critical distinguishing feature of the allowed claims. This position is respectfully traversed. Although the benefits of the circular portions of the attachment pads were certainly pointed out in the remarks section of the amendment filed on July 8, 1999 – it is respectfully submitted that the remarks do not state that the circular nature of the attachment pads is critical to all aspects of the invention. Accordingly, it is respectfully submitted that the amendments and comments made in the response filed July 8<sup>th</sup> should not invoke the recapture doctrine in a manner that precludes allowance of claim 11 or claims 12-14 that depend therefrom.

## 2) **Dependent Claims 15-16**

Dependent claim 15 as presently presented recites:

15. An electronic module comprising:  
an integrated circuit package as recite in claim 11 wherein ground pads on the die are electrically connected to the die attach platform; and  
a printed circuit board, wherein the die attach platform is directly electrically connected to a ground on the printed circuit board.

Similar to claim 11, claim 15 is also attempting to recapture subject matter that is **narrower** in relevant part than original claim 1 of the '423 patent application. Specifically, claim 15 includes the limitations discussed above in connection with claim 11 and also requires that the ground pads on the die are electrically connected to the die attach platform. Additionally, claim 15 requires a printed circuit board with a ground that is directly electrically connected to the die attach platform. These limitations were NOT present in original claim 1 of the application that matured into the '423 patent. They are also directed toward very different features than the aforementioned original claim 1, which does not refer to a printed circuit board or ground pads on a die. Thus, it is respectfully submitted that claim 15 as currently pending does not come close to recapturing the scope of original claim 1 of the application that matured into the '423 patent.

In view of the foregoing, and in accordance with MPEP 1412.02(I)(C)(2)(d) and *Ex Parte Eggert*, it is respectfully requested that the pending rejections of claim 15, and claim 16 that depends therefrom, should be withdrawn.

## 3) **Dependent Claims 17-18**

Dependent claim 17 as presently presented recites:

17. An electronic module comprising:  
an integrated circuit package as recite in claim 11; and  
a printed circuit board, wherein the bus bar is directly electrically connected to the printed circuit board.

Similar to claim 11, claim 17 is also attempting to recapture subject matter that is **narrower** in relevant part than original claim 1 of the '423 patent application. Specifically, claim 17 includes the limitations discussed above in connection with claim 11 and also requires that the bus bar is directly electrically connected to a printed circuit board. This limitation is NOT present in original claim 1 of the application that matured into the '423 patent. It is also directed toward a different feature than the aforementioned original claim 1, which does not refer to electrical connections between a printed circuit board and the bus bar. Thus, it is respectfully submitted that claim 17 as currently pending does not come close to recapturing the scope of original claim 1 of the application that matured into the '423 patent.

In view of the foregoing, and in accordance with MPEP 1412.02(I)(C)(2)(d) and *Ex Parte Eggert*, it is respectfully requested that the pending rejections of claim 17, and claim 18 that depends therefrom, should be withdrawn.

#### 4) Independent Claim 19

Independent claim 19 as presently presented recites an electronic module comprising a printed circuit board having a ground and an integrated circuit package with the following limitations:

a lead frame including a die attach platform and *a plurality of contacts, wherein bottom surfaces of the die attach platform and the contacts are substantially co-planar*, the die attach platform being directly electrically connected to the ground on the printed circuit board;

a die carried by the die attach platform, the die having a plurality of signal pads that are electrically connected to at least some of the contacts, and at least one ground pad that is electrically connected to the die attach platform; and

*a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform and the conductive contacts exposed*, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the die attach platform from at least some of the conductive contacts, and *wherein the exposed bottom surfaces of the contacts form attachment pads. (emphasis added)*

Similar to claim 11, claim 19 is also attempting to recapture subject matter that is **narrower** in relevant part than original claim 1 of the '423 patent application. Specifically, claim 19 requires that the bottom surfaces of the contacts be exposed through a protective casing to form attachment pads. As described in the specification, the attachment pads provide a surface that solder bumps can attach

to. (See, e.g., Col. 2, lines 46-50.) As discussed above with respect to claim 11, the "attachment pad" feature was NOT present in original claim 1 of the application that matured into the '423 patent. Rather, that general feature was later added in the amendment dated July 8, 1999. In that amendment, the language added to claim 1 set forth that the leads included "a circular portion formed as an attachment pad." Claim 19 as presently presented still retains the attachment pad limitation on the contacts. Claim 19 only seeks to broaden the scope of the attachment pad feature by eliminating the requirement that the attachment pad include a circular portion. Therefore, it is respectfully submitted that claim 19 as currently presented does not seek to recapture the full scope of original claim 1 in the original application which did not require any attachment pad whatsoever.

Additionally, claim 19 as currently pending requires both: (a) that the bottom surfaces of the contacts (from which the attachment pads are defined) be co-planar with the bottom surface of the die attach platform; and (b) that the bottom surfaces of the contacts be exposed through a casing to form the attachment pads. Neither of these features are required by issued claim 1 of the '423 patent and neither were required by original claim 1 of the application that matured into the '423 patent. Thus, it is respectfully submitted that claim 19, as currently pending does not come close to recapturing the scope of the leads feature of original claim 1 of the application that matured into the '423 patent.

In view of the foregoing, and in accordance with MPEP 1412.02(I)(C)(2)(d) and *Ex Parte Eggert*, it is respectfully submitted that the scope of the contacts element in claim 19 should not be barred by the recapture rule.

Additionally, it is noted that claim 19 is directed towards a very different feature than the bus bars recited in original claim 1 of the application that matured into the '423 patent. Specifically, claim 19 as presently presented requires that the die attach platform be used as a ground electrode. At least one ground pad on the die is electrically connected to the die attach platform, and the die attach platform is electrically connected to ground. Since claim 19 is directed towards a very different feature (the ground electrode) than claim 1 of the application that matured into the '423 patent (the bus bars), it is respectfully submitted that the recapture rule should not be applicable to claim 19 for this reason as well. Thus, it is respectfully submitted that the pending rejections of claim 19 should be withdrawn for this reason as well.

**5) Dependent Claim 20**

Dependent claim 20 as presently presented recites the electronic module of claim 19 with the following additional limitation: “wherein the die attach platform is directly electrically connected to the ground on the printed circuit board by soldering.”

Claim 20 is also attempting to recapture subject matter that is **narrower** in relevant part than original claim 1 of the ‘423 patent application. Specifically, claim 20 includes the limitations discussed above in connection with claim 19 and also requires a direct electrical connection between the ground on a printed circuit board and a die attach platform. This limitation is NOT present in original claim 1 of the application that matured into the ‘423 patent. It is also directed toward a different feature than the aforementioned original claim 1, which does not refer to electrical connections between a printed circuit board and the die attach platform. Thus, it is respectfully submitted that claim 20 as currently pending does not come close to recapturing the scope of original claim 1 of the application that matured into the ‘423 patent.

In view of the foregoing, and in accordance with MPEP 1412.02(I)(C)(2)(d) and *Ex Parte Eggert*, it is respectfully requested that the pending rejection of claim 20 should be withdrawn.

**6) Dependent Claims 21-22**

Dependent claim 21 as presently presented recites the electronic module of claim 19 with the following limitation: “wherein the lead frame further includes a bus bar positioned between the die attach platform and at least some of the contacts, and wherein the bus bar is directly electrically connected to the printed circuit board.”

Claim 21 is also attempting to recapture subject matter that is **narrower** in relevant part than original claim 1 of the ‘423 patent application. Specifically, claim 21 includes the limitations discussed above in connection with claim 19 and also requires a direct electrical connection between the bus bar and the die attach platform. Additionally, claim 21 requires the bus bar to be positioned between the die attach platform. These limitations are NOT present in original claim 1 of the application that matured into the ‘423 patent. It is also directed toward very different features than the aforementioned original claim 1, which does not refer to an electrical connection between a

printed circuit board and the bus bar or the positioning of the bus bar between contacts and the die attach platform. Thus, it is respectfully submitted that claim 21 as currently pending does not come close to recapturing the scope of original claim 1 of the application that matured into the '423 patent.

In view of the foregoing, and in accordance with MPEP 1412.02(I)(C)(2)(d) and *Ex Parte Eggert*, it is respectfully requested that the pending rejection of claim 21 should be withdrawn. Claim 22, which also depends from claim 19, recites multiple bus bars, each with features similar to those of the bus bar of claim 21. For at least the above reasons, a withdrawal of the pending rejection of claim 22 is also respectfully requested.

## 7) Independent Claim 23

Independent claim 23 as presently presented recites an integrated circuit package with the following limitations:

a lead frame including a die attach platform, a plurality of contacts that are spaced apart from the die attach platform and a bus bar that is positioned between the die attach platform and at least some of the contacts, wherein *bottom surfaces of the die attach platform, the contacts and the bus bar are substantially coplanar, wherein each of the contacts includes a portion that forms an attachment pad;*

a die carried by the die attach platform and electrically connected to the bus bar and at least some of the contacts; and

*a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed*, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the bus bar from at least some of the conductive contacts; and

*wherein the integrated circuit package may be attached to a substrate by soldering the attachment portions of the lead frame to the substrate. (emphasis added.)*

Similar to claim 11, claim 23 is also attempting to recapture subject matter that is **narrower** in relevant part than original claim 1 of the '423 patent application. Specifically, claim 23 requires that each of the contacts includes a portion that forms an attachment pad. As described in the specification, the attachment pads provide a surface that solder bumps can attach to. (See, e.g., Col. 2, lines 46-50.) As discussed above with respect to claim 11, the "attachment pad" feature was NOT present in original claim 1 of the application that matured into the '423 patent. Rather, that general



feature was later added in the amendment dated July 8, 1999. In that amendment, the language added to claim 1 set forth that the leads included “a circular portion formed as an attachment pad.” Claim 23 as presently presented still retains the attachment pad limitation on the contacts. Claim 23 only seeks to broaden the scope of the attachment pad feature by eliminating the requirement that the attachment pad include a circular portion. Therefore, it is respectfully submitted that claim 23 as currently presented does not seek to recapture the full scope of original claim 1 in the original application which did not require any attachment pad whatsoever.

Additionally, claim 23 as currently pending requires: (a) that the bottom surfaces of the die attach platform, contacts (from which the attachment pads are defined) and the bus bar are substantially co-planar; (b) that the bottom surfaces of the die attach platform, the bus bar and contacts be exposed through a casing; and (c) that the integrated circuit package be attached to a substrate by soldering the attachment portions of the leadframe to the substrate. None of these features are required by issued claim 1 of the '423 patent and none were required by original claim 1 of the application that matured into the '423 patent. Thus, it is respectfully submitted that claim 23, as currently pending does not come close to recapturing the scope of the leads feature of original claim 1 of the application that matured into the '423 patent.

In view of the foregoing, and in accordance with MPEP 1412.02(I)(C)(2)(d) and *Ex Parte Eggert*, it is respectfully submitted that the pending rejection of claim 23 should be withdrawn.

## C) CONCLUSION

In view of the foregoing, it is respectfully submitted that the outstanding rejections of claims 11-23 should be reversed.

Respectfully Submitted,  
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## VIII. CLAIMS APPENDIX

### CLAIMS ON APPEAL

11. An integrated circuit package comprising:

a lead frame including a die attach platform, a plurality of contacts that are spaced apart from the die attach platform and a bus bar that is positioned between the die attach platform and at least some of the contacts, wherein bottom surfaces of the die attach platform, the contacts and the bus bar are substantially co-planar, and wherein each of the contacts includes a portion that forms an attachment pad;

a die carried by the die attach platform and electrically connected to the bus bar and at least some of the contacts; and

a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the bus bar from at least some of the conductive contacts, whereby the attachment pads are exposed at the bottom surface of the package.

12. An integrated circuit package as recited in claim 11 wherein the bus bar is a first bus bar, the integrated circuit further comprising a second bus bar that is also positioned between the die attach platform and some of the contacts.

13. An integrated circuit package as recited in claim 12 wherein the first and second bus bars are located on opposite sides of the die attach platform.

14. An integrated circuit package as recited in claim 11 further comprising bonding wires for electrically connecting the die to the bus bar and the contacts.

15. An electronic module comprising:

an integrated circuit package as recite in claim 11 wherein ground pads on the die are electrically connected to the die attach platform; and

a printed circuit board, wherein the die attach platform is directly electrically connected to a ground on the printed circuit board.

16. An electronic module as recited in claim 15 wherein the die attach platform is directly electrically connected to the ground on the printed circuit board by soldering.

17. An electronic module comprising:

an integrated circuit package as recite in claim 11; and

a printed circuit board, wherein the bus bar is directly electrically connected to the printed circuit board.

18. An electronic module as recited in claim 17 wherein the bus bar is a first bus bar, the integrated circuit further comprising a second bus bar that is also positioned between the die attach platform and some of the contacts and wherein both the first and second bus bars are directly electrically connected to the printed circuit board.

19. An electronic module comprising an integrated circuit package and a printed circuit board, the printed circuit board having a ground, wherein the integrated circuit package comprises:

a lead frame including a die attach platform and a plurality of contacts, wherein bottom surfaces of the die attach platform and the contacts are substantially co-planar, the die attach platform being directly electrically connected to the ground on the printed circuit board;

a die carried by the die attach platform, the die having a plurality of signal pads that are electrically connected to at least some of the contacts, and at least one ground pad that is electrically connected to the die attach platform; and

a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the die attach platform from at least some of the conductive contacts, and wherein the exposed bottom surfaces of the contacts form attachment pads.

20. A module as recited in claim 19 wherein the die attach platform is directly electrically connected to the ground on the printed circuit board by soldering.

21. A module as recited in claim 19 wherein the lead frame further includes a bus bar positioned between the die attach platform and at least some of the contacts, and wherein the bus bar is directly electrically connected to the printed circuit board.

22. A module as recited in claim 19 wherein the lead frame further includes a plurality of bus bars positioned between the die attach platform and at least some of the contacts, and wherein each bus bars directly electrically connected to the printed circuit board.

23. An integrated circuit package comprising:

a lead frame including a die attach platform, a plurality of contacts that are spaced apart from the die attach platform and a bus bar that is positioned between the die attach platform and at least some of the contacts, wherein bottom surfaces of the die attach platform, the contacts and the bus bar are substantially co-planar, wherein each of the contacts includes a portion that forms an attachment pad;

a die carried by the die attach platform and electrically connected to the bus bar and at least some of the contacts; and

a protective casing covering the die and the lead frame while leaving bottom surfaces of the die attach platform, the bus bar and the conductive contacts exposed, wherein encapsulation material that forms the protective casing is exposed at a bottom surface of the package to physically isolate the bus bar from at least some of the conductive contacts; and

wherein the integrated circuit package may be attached to a substrate by soldering the attachment portions of the lead frame to the substrate.

**IX. EVIDENCE APPENDIX**

**NONE**

**X. RELATED PROCEEDINGS APPENDIX**

**NONE**